

## **ABSTRACT OF DISCLOSURE**

There is provided a multi-mode communication system which is operable according to different operating modes, such as GSM and WCDMA. The multi-mode communication system includes first and second switching units, a delta-sigma modulator, an analog-to-digital converter, sequential convolution units and a selection unit. The delta-sigma modulator samples an analog signal, which is inputted through the first switching unit in one mode, into 1-bit digital signal. In another mode, the analog-to-digital converter samples an analog signal, which is inputted through the first switching unit into an n-bit digital signal. The sequential convolution units multiply filter factors with the output of the delta-sigma modulator, which is inputted through the second switching unit at the first mode, and multiply PN codes by the output of the analog-to-digital converter, which is inputted through the second switching unit at the second mode, to generate WCDMA output waveforms. The selection unit delays the outputs of the sequential convolution units by a predetermined time at the GSM mode to restore GSM output waveforms. Accordingly, the multi-mode communication system is operable according to multimodes, such as GSM mode and WCDMA mode.